

## REMARKS

Claims 1, 2, 4, 7, and 30-36 remain pending in the instant application. Claims 1, 2, 4, 7, and 30-36 presently stand rejected. Claims 1, 4, and 7 are amended herein. Claim 8 is hereby cancelled without prejudice. Entry of this amendment and reconsideration of the pending claims are respectfully requested.

### *Drawings*

The Examiner is thanked for the indication that the drawings filed on April 2, 2003 were accepted.

### *Claim Rejections – 35 U.S.C. § 103*

Claims 1, 2, 4, 7, 8, and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,363,202 B1 to Goodfellow.

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03.

Amended independent claim 1 now recites, in pertinent part, “reflecting a first portion of the optical beam ... with first and second pluralities of silicon and polysilicon interfaces, respectively, disposed in the semiconductor substrate....” Applicants respectfully submit that the combination of Goodfellow and Kapany fails to disclose, teach, or fairly suggest the aforementioned recited element.

In relation to cancelled claim 8, the Examiner stated,

Goodfellow teaches wherein the second material comprises polysilicon (col. 3 lines 15-20). Goodfellow states the use of “polymer waveguides, silica on silicon waveguides, group III-V material waveguides” as the possible materials to create a waveguide, and **polysilicon is a member of the material groups disclosed by Goodfellow.**

*Office Action* mailed September 25, 2003, page 4, lines 1-4 (emphasis added). However, “[t]he fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness.” M.P.E.P. § 2144.08 citing *In re Baird*, 16 F.3d 380, 382 (Fed. Cir. 1994). Thus the Examiner has not

established a prima facie case of obviousness by merely stating polysilicon is a member (species) of material groups (genus) disclosed by Goodfellow. Goodfellow simply does not teach or suggest a plurality of silicon and polysilicon interfaces.

Additionally, the portion of Goodfellow cited by the Examiner discloses “polymer **waveguides**, silica on silicon **waveguides**, Group III-V material **waveguides**, and silicon **waveguides**...” *Goodfellow*, col. 3, lines 14-16 (emphasis added). Thus, this portion of Goodfellow discloses material types of **waveguides**, but is unrelated to gratings or silicon and polysilicon interfaces. Rather, the portion of Goodfellow relied upon by the Examiner as disclosing a grating states,

filtering achieved by forming a phased grating by **etching, embossing, exposure to ultra-violet radiation** using holography or with a **phase mask** or **aperture mask**.

*Goodfellow*, col. 5, lines 14-17 (emphasis added). Thus, Goodfellow discloses forming a grating by etching, embossing, exposure to radiation, or with phase or aperture masks. However, a grating formed using these techniques is very different than a plurality of silicon and polysilicon interfaces, as recited in amended claim 1.

“It is **essential** that Office personnel find some motivation or suggestion to make the claimed invention in light of the prior art teachings.” M.P.E.P. § 2144.08(II)(A). “If such a species or subgenus is **structurally similar** to that claimed, its disclosure may motivate one of ordinary skill in the art to choose the claimed species or subgenus, based on the reasonable expectation that **structurally similar** species usually have similar properties.” M.P.E.P. § 2144.08(II)(A)(4)(c). However, as discussed above, the gratings disclosed by Goodfellow (e.g., etching, embossing, exposure to radiation, phase mask, or aperture mask) are not structurally similar to a plurality of silicon and polysilicon interfaces. Consequently, there is no motivation or suggestion to make the claimed invention, as required under M.P.E.P. § 2144.08(II)(A).

Therefore, the combination of Goodfellow and Kapany fails to teach or suggest all elements of independent claim 1, as required under M.P.E.P. § 2143.03. Accordingly, Applicants request that the instant § 103 rejection of claim 1 be withdrawn.

Independent claim 30 recites, in pertinent part, “perturbing an effective index of refraction a plurality of times along the optical path with a plurality of insulated

conductor structures protruding into the optical path....” Applicants submit that the combination of Goodfellow and Kapany fails to disclose, teach, or fairly suggest the aforementioned recited element.

The Examiner acknowledges that Goodfellow “lacks reference to the insulated conductor structure protruding into the optical path.” *Office Action* mailed September 25, 2003, page 4, lines 17-18. However, the Examiner rejected claim 30 stating, “Kapany teaches the use of insulated (48) conductor (50) structure protruding into the optical path. The optical path of Kapany includes all the layers inside body 57 (Fig. 4A) because the light can diffuse slightly into the other layers especially layer 48 from core 47.” *Office Action* mailed September 25, 2003, page 4, lines 18-21. Applicants respectfully disagree.

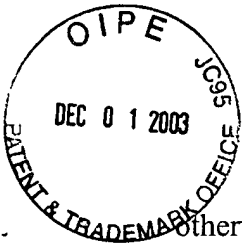
First, claim 30 recites a “**plurality** of insulated conductor structures” protruding into the optical path to” perturb an effective index of refraction a **plurality** of times along the optical path.” Kapany fails to teach or suggest a plurality of cladding 48 and metal layer 50 (the elements of Kapany cited by the Examiner as corresponding to Applicants’ claimed insulated conductor structures) to perturb an effective index of refraction a plurality of times along an optical path. Applicants point out that a single insulated conductor structure protruding into the optical path will not perturb an effective index of refraction a **plurality** of times along the optical path.

Second, Applicants respectfully submit that Kapany cannot be reasonably interpreted as having an optical path including all the layers inside body 57 (Fig. 4A of Kapany). The layers within body 57 include a fiber having a core 47 and a cladding 48, a metal layer 50, a layer 52 of acousto-electric material, and a layer 53 of metal. Thus, the optical path of Kapany is within fiber formed by core 47 and cladding 48. While a portion of light may diffuse slightly into cladding 48, it is unreasonable to suggest light will diffuse into metal or metal layer 50. Furthermore, cladding 48 and metal layer 50 are **layers** that extend along the length of the optical path as opposed to protruding into the optical path. In fact, the interface between core 47 and cladding 48 define the optical path. Therefore, cladding 48 cannot be reasonably interpreted as a structure **protruding** into the optical path when it is a layer defining the optical path.

Dependent claims 2, 4, 7, and 31-36 are nonobvious over the prior art of record for at least the same reasons as discussed above in connection with their respective independent claims, in addition to adding further limitations of their own. Accordingly, Applicants respectfully request that the instant § 103 rejections for claims 2, 4, 7, and 31-36 be withdrawn.

### **CONCLUSION**

In view of the foregoing amendments and remarks, Applicants believe the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the undersigned representative if the Examiner believes that an interview might be useful for any reason.



### CHARGE DEPOSIT ACCOUNT

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Respectfully submitted,

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Nov. 25, 2003

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### FIRST CLASS CERTIFICATE OF MAILING

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